

WHAT IS CLAIMED IS:

1. A data recording method of using random series to scramble input data and generate recording data, comprising:

5 a random series generation process of generating a pre-determined random series;

a random series conversion process of selectively converting said random series to different random series based on recording position data; and

10 a scrambling process of using said converted random series to scramble input data.

2. The data recording method according to claim 1, wherein said random series conversion process converts said random series to different random series by performing interleaving on said random series by rearranging the bit order of the output bits of said random series based on said recording position data.

3. The data recording method according to claim 1, wherein said random series conversion process converts said random series to different random series by inverting the bits of said random series according to an inverted pattern based on said recording position data.

4. The data recording method according to claim 1, wherein said random series conversion process performs interleaving on said random series by rearranging the bit order of the output bits of said random series based on said recording position data, and then performs

a specified calculation on the interleave random series and delayed output of that random series and converts said random series to different random series based on the results of the performed calculation.

5

5. The data recording method according to claim 2, wherein said random series conversion process performs said interleaving on a 16-bit random series, then alternately selects and outputs the high-order 8 bits or low-order 8 bits.

10

6. The data recording method according to claim 1, wherein said recording data are recorded in order on tracks on a disk-shaped medium, and in said random series conversion process are converted to different random series for adjacent tracks.

15

7. A data recording apparatus that uses random series to scramble input data and generate recording data, comprising:

a random series generation device of generating a pre-determined random series;

20 a random series conversion device of selectively converting said random series to different random series based on recording position data; and

a scrambling device of using said converted random series to scramble input data.

25

8. The data recording apparatus according to claim 7, wherein

5 said random series conversion device includes an interleaving device of rearranging the order of the output bits of said random series based on said recording position data, and converts said random series to different random series by performing interleaving on said random series by said interleaving device.

9. The data recording apparatus according to claim 7, wherein
10 said random series conversion device includes a bit inversion device of inverting bits according to an inverted pattern based on said recording position data, and converts said random series to different random series by inverting the bits of said random series by said bit inversion device.

15 10. The data recording apparatus according to claim 7, wherein
said random series conversion device includes an interleaving device of rearranging the order of the output bits of said random series based on said recording position data, a delay device of generating delayed output of the random series after interleaving has been performed, and a calculation device of performing a specified calculation on the random
20 series that is interleaved by said interleaving device and the delayed output of said delay device, and performs conversion based on the calculation results.

25 11. The data recording apparatus according to claim 8, wherein
said random series conversion device includes a selective output device of alternately selecting the higher-order 8 bits or lower-order 8 bits after

interleaving was performed on a 16-bit random series by said interleaving device.

12. The data recording apparatus according to claim 7, wherein
5 said recording data are recorded in order on the tracks of a disk-shaped recording medium, and said random series conversion device converts said random series to different random series for adjacent tracks.

10 13. A data reproduction method for descrambling input data by using a random series which;

generates reproduction data by using the random series that were selected during scrambling to descramble said input data, which were scrambled by data recording method according to claim 1.

15 14. A data reproduction apparatus for descrambling input data by using a random series which;

generates reproduction data by using the random series that were selected during scrambling to descramble said input data, which were scrambled by the data recording method according to claim 1.